

**Manitou Road(CR 19), Tonka Bay Road, and
West Point Road
Bicycle and Pedestrian Trail Study**

Preliminary Engineering Report

December 13, 2005

I hereby certify that this plan, specification, or report was prepared by me or, under my direct supervision and that I am a duly registered professional landscape architect or engineer under the laws of the state of Minnesota.

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I. PROJECT SCOPE

In August 2005, the Tonka Bay City Council authorized Schoell & Madson to complete a bicycle / pedestrian trail feasibility study for the corridors of Manitou Road(CR 19), Tonka Bay Road, and West Point Road to traverse from the current reconstructed intersection of Manitou Road(CR 19)/Smithtown Road to Wekota Beach Park, via Tonka Bay Road and West Point Road. A followup meeting was conducted on September 13th, 2005, involving Sara Irvine, City Administrator; Greg Kluver, Public Works Superintendent; Anthony Marceau, City Council Member; Ken Adolf, Schoell & Madson; and Paul Schroeder, Schoell & Madson. The meeting's intent was to discuss and provide Schoell & Madson direction for the study's scope and trail recommendations. A meeting was also conducted with Hennepin County Public Works Transportation Department on October 24th, 2005, to discuss the project and receive county input. Those in attendance included: Bob Byers-Hennepin County, Erik Drager-Hennepin County, Anthony Marceau-Tonka Bay City Council, and Paul Schroeder-Schoell & Madson.

The scope of the study is to provide only one location for a bituminous two-way trail that is separated from the road as described in the Minnesota Bicycle Transportation Planning and Design Guidelines, dated June 1996. Other alternatives, such as designated bike lanes on both sides of the roadway, were removed from the project scope. The study is to include review of existing conditions, describe proposed improvements, calculate a preliminary cost estimate, summarize financial elements, and provide a conclusion and recommendation. It was also recommended that study be separated into two categories, one being for Manitou Road(CR 19) and the other for Tonka Bay Road/West Point Road. See Exhibit No. 1 for Location Map.

The study area along Manitou Road(CR19) would start at the reconstructed intersection(2005/2006) of Manitou Road and Smithtown Road. The new intersection is reconstructing the parking area in the northwest quadrant and providing a new sidewalk on the east side of Manitou Road. The study area is to start at the north side of the driveway adjacent to the new sidewalk. The location of the trail along this segment is to be only on the east side of the road and possibly integrated with an existing trail at Old Orchard Park, near City Hall.

The study area would include Tonka Bay Road from Manitou Road to West Point Road, and continue along West Point Road to Wekota Beach Park; located at Lake Minnetonka-Echo Bay.

Other corridors for the trail were discussed at the meeting but none were deemed viable due to certain constraints. Two of the corridors that were not deemed viable were the old trolley line(under private ownership) and the backyard wetland areas(limited trail area and no public connection).

Existing conditions and proposed improvements are based on general mapping, site observations, and overall assessment of the area for the development of this study. It is assumed that the trail can be located with the road Right-of-way or trail easement areas(as deemed necessary). Study information is deemed conceptual and not intended for accurate layout and figures.

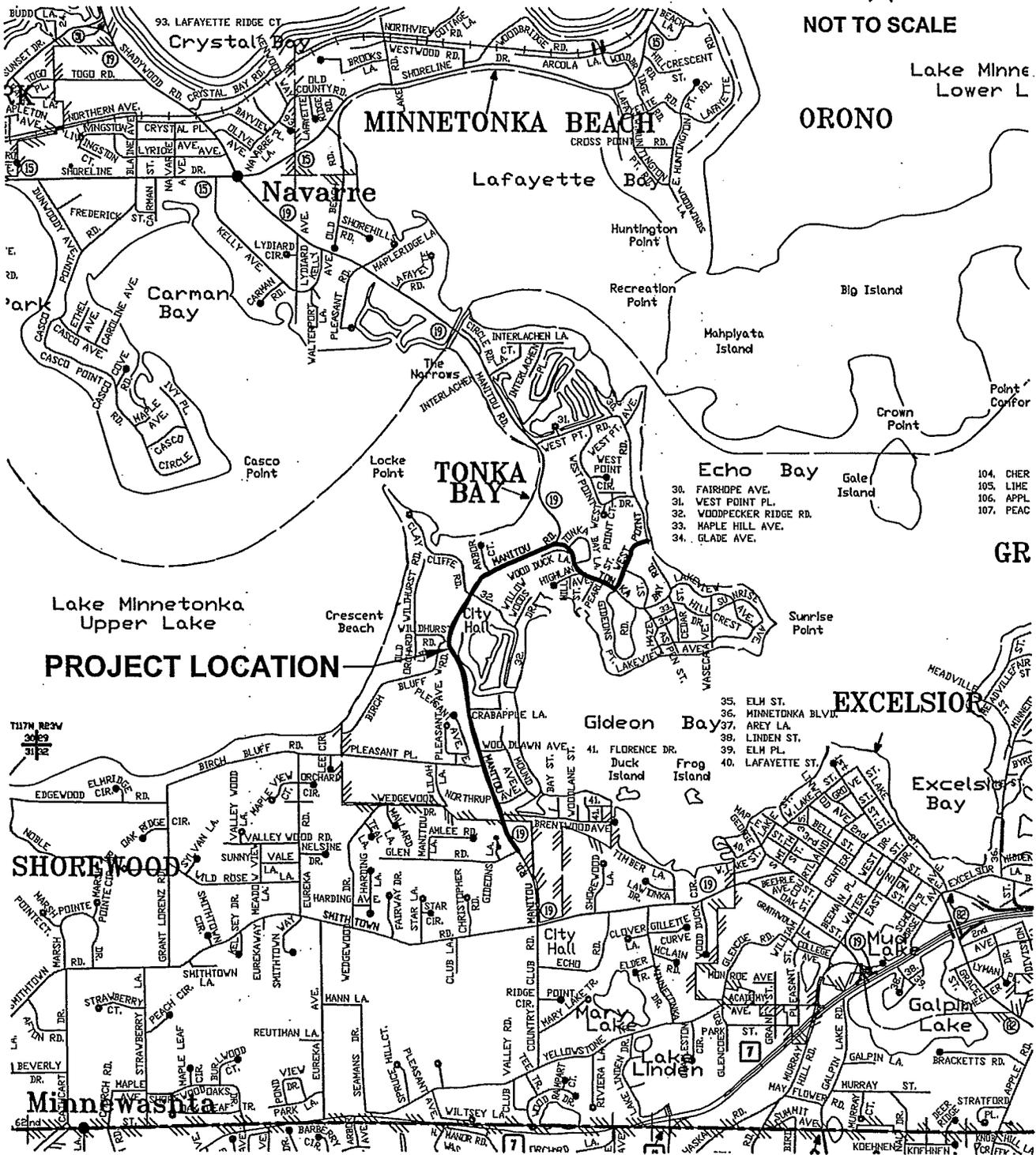
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Bicycle and Pedestrian Trail Study
SCHOELL & MADSON, INC.
December 13, 2005**



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PROJECT LOCATION

**LOCATION MAP
EXHIBIT NO. 1**

II. EXISTING CONDITIONS / CORRIDOR ANALYSIS

Manitou Road/CR 19 (East side only)

Description of corridor is from south to north and describing primarily the east side of the road. The sections describe similar segments of the corridor:

CR19 Xcel Area. The Xcel Area is defined between the bus company driveway, along Xcel Energy office parcel, and to the regional trail, which primarily contains bituminous curb and lawn grass front yards. The south connection point would occur at the north side of the bus company driveway. The new intersection redesign(2005/2006) has a 6' wide concrete sidewalk(8' wide along the structural wall) with a 5' boulevard proposed to end at the south side of the bus company driveway and appears to be an appropriate location to connect pedestrian areas. There are utility poles along this side that would possibly be in the way of a new trail along with four driveway crossings. There is a minor drainage structure at the transition from the bituminous curb to the regional trail that would need to be modified. This area, and Manitou Road/CR 19 ROW, is officially in Shorewood.

CR19 Regional Trail. This area is defined by the 100' wide regional trail corridor that is identified as Three Rivers Park District LRT Trail(North). Light Rail Transit is guided along this corridor but anticipate the development to be at least 20 years into the future. The trail is primarily compacted aggregate with trail crossing markings and signage as it traverses across Manitou Road/CR 19. A future north/south trail would also cross this trail. This crossing has received significant attention due to the intense traffic along Manitou Road. Hennepin County and Three Rivers Park District have been looking at ways to address the vehicle and bike trail conflict. Some of the more costlier items included building bridges or tunnels to help separate transportation issues have been considered, but the cost of the potential improvement prevents any immediate action. The trail crossing at Manitou Road is officially in Shorewood.

CR19 Manitou Park. Although this is on the west side of Manitou Road, a connection from the proposed trail to the park would be desired. A crossing across Manitou Road/CR 19 would mostly likely not be allowed from Hennepin County due to the traffic control issues and the close proximity of the regional trail crossing. It does appear that the regional trail does traverse along the south side of the park a short distance to the west of the existing crossing. Three Rivers Park District has indicated that the regional trail could be used as a connection to the park, via the existing crossing. There are wetlands between the regional trail and the park, but a connection with minimal impacts could occur at the east end of the common property line. Additional trails within Manitou Park would need to be created to connect the regional trail to other trails in the park.

CR19 Brentwood Business. There are two businesses just north of the regional trail that may have some impact from the proposed trail. The southern business has a fence and parking/staging area that appears to be setback far enough to accommodate the trail. The northern business is in close proximity to Manitou Road and would have significant impacts, due to a close building setback(5'+/-) and related parking along the shoulder area of the road. The building's front door is accessed on the road side and would have some issues with customer access and trail access. There are also utility poles/street lights along this corridor that would typically be in conflict with the trail. The northern business may be one of the more significant issues to overcome.

CR19 Single Family South. This area is defined primarily between the streets of Northrup Avenue and Woodlawn Avenue. This segment illustrates single family homes that have driveways onto Manitou Road with lawn grass front yards. The utility poles cross the road near the southern end of this area, but still have streetlights at the intersections. This area appears to provide some room for integration of the trail with some minor tree/landscaping issues.

CR19 Single Family Central. This area is defined primarily between Woodlawn Avenue and the south end of Old Orchard Park. This area has about four side yards along Manitou Road and heavily vegetated wetland areas. The side yards have significant landscape/vegetation along with fences and steep slopes. The rest of the segment is mostly low, densely vegetated wetland areas. The modification of grades and landscape in these areas may be significant. Although there are no utility poles, there are streetlights at the intersections.

CR19 Old Orchard Park. This area is defined from the Single Family Central area to the common driveway entrance to City Hall. The south leg has significant grade transitions between the road and the adjacent wetland that is heavily vegetated. In addition, there are four supporting utility poles/guy wires along this area at the curve of the road. This south leg is another significant area of modification. The north leg is primarily lawn grass area. There is an existing 8'+/- bituminous trail with the park, but is significantly lower than the road. Transition from road grade to existing trail grade may have some moderate impacts. Also, there is an existing culvert that drains water into the park, across from Birch Bluff Road, upstream from the existing trail. This may have some effect on the trail being accessible during wet periods. It was the intent to use the existing trail, if possible. The trail ends at the northern parking lot where a future trail would typically be traversing through the parking area. This maybe problematic if a conflict between vehicles and bikers is deemed risky. Also, the trail would cross a multi-driveway condition.

CR19 City Hall. This area is defined from the Old Orchard Park parking lot to Woodpecker Drive. This segment has large areas of bituminous pavement along the frontage road in front of City Hall. There is a lift station on the west side of the frontage road and approximately 30' of lawn grass buffer. There appears to be plenty of room to traverse a trail in this corridor, but need to modify the site to segregate trail from vehicle areas.

CR19 Single Family North. This area is defined from Woodpecker Ridge Road to the duplex housing area. The existing conditions appear to be more of a wooded drainage area than a single-family community, due to visibility of the buildings being quite limited. The impression from Manitou Road is mostly low wooded areas, with an adjacent wetland. Coordination of the drainage ditch in relation to the long private drive may be the most significant item in this segment. Utility poles are primarily located on the east side of the road.

CR19 Duplex. This area is defined from the Single Family North area to Tonka Bay Road. Lawn grass frontyards, with pockets of landscape buffers, is fairly typical. There is berming at the corner of Manitou Road and Tonka Bay Road to help screen the headlights to the homes from southbound traffic on Manitou Road. A proposed trail would effect this berming if placed in this area. Utility poles are located on the east side of the road.

CR19 ROW of Manitou Road(CR 19). This general area encompasses the right-of-way of this heavily travel area, estimated at around 20,000 ADT. There are turn lanes at most of the major driveways and intersections that would effect the location of the trails and crossings. County Road 19 is marked by the county to be a regional bike trail corridor, in which Hennepin County Public Works Transportation Department, Three Rivers Park District, and the Department of Natural Resources would have project interest. The connection at Tonka Bay Road is a double intersection and would pose some difficulties involving trail crossing. The county road is primarily rural conditions with 66' right-of-way with about 13'+/- drive lanes, variable shoulders and drainage ditches. A grade separated trail would involve new small drainage systems to be implemented. Road cross-section would also require a minimum shoulder width that would need to be implemented with the parallel trail. Many areas involve significant grade transitions and wooded/wetland impacts that would need to be resolved. Utility pole locations are anticipated to be a significant item to resolve. Other miscellaneous items, such as hydrant relocations, are anticipated to be part of the project but would be less significant. Traffic signs and their locations will also play an important component to trail locations.

CR19 Utilities. There are minor and major utility conflicts observed. Minor utility conflicts would include relocation of items such as hydrants, telephone boxes, and other items. Major utility conflict is primarily the power/telephone poles. There are approximately 27 wood poles with arms, on the east side of CR 19, including 4 support poles with guys wires near Old Orchard Park. Although the Transmission group of Xcel Energy has indicated that a transmission line is located along CR 19 between the Lake Minnetonka bays, both the Transmission Group and Distribution Group preliminary indicated that distribution lines were within this corridor. Transmission lines are the larger and more costly items. Further legal review by Xcel would need to occur at the time of trail development to see if the poles are located in a permit area, such as an old railroad ROW. If so, work in a permit area would be funded by the requestor, not the utility company, other wise the utility company would be required to relocate within a right-of-way.

Tonka Bay Road

TB Northwest Single Family. This area is defined to encompass the Tonka Bay Lane community; which is primarily single family side yards, with a significant setback to the buildings. The setback area is heavily wooded with some grade differences.

TB Northeast Single Family. This area is defined by the low area(old trolley line) to West Point Road, which is primarily single family with driveways facing Tonka Bay Road. Low area is heavily wooded with significant grade differences along with a noticeable storm structure. The residential lots are primarily lawn grass front yards with mature trees and other moderate vegetation. There are utility poles along this side of the road, but appear to be smaller in stature.

TB South Duplex. This area is primarily at the southeast corner of Manitou Road and Tonka Bay Road and is duplex housing. Lawn grass front yards, with pockets of landscaping to buffer the buildings, is fairly typical. There is berming at the corner of Manitou Road and Tonka Bay Road to help screen the headlights to the homes from southbound traffic on Manitou Road. A proposed trail would effect this berming if placed in this area. Utility lines cross to the north at this area, than traverse along the east side of Manitou Road.

TB South Single Family. This area is defined from the TB South Duplex area to West Point Road/Gideons Point Road. The west and east ends are mostly heavily wooded side yards areas with deep setbacks to the buildings. There are some significant grade difference at the low areas. The central area has two homes that are relatively close the Tonka Bay Road and would pose difficulties to integrate a trail in the front yards. There are utility poles on this side of the road, in addition to the north side. It is also noted that all the mailboxes occur on this side of the road.

TB ROW of Tonka Bay Road. This area is defined as 66' right-of-way with 13'+/- drive lanes, minimal-to-no shoulder, and drainage ditches. The utility poles are primarily located on both sides of the road with mailboxes, guardrails, and other miscellaneous items on the south side. The boulevard areas vary with primarily steep slopes, dense vegetation, and lawn grass front yards.

TB Utilities. There are minor and major utility conflicts observed. Minor utility conflicts would include relocation of items such as hydrants, telephone boxes, and other items. Major utility conflict is primarily the power/telephone poles. There are approximately 21 wood poles along the study area of Tonka Bay Road, 12 poles on the north side and 9 poles on the south side. The north side has slightly shorter poles with no arms and is primarily for telephone and selected power line transfer to individual homes. The south side has electrical power poles with arms, and are taller than the telephone poles.

West Point Road

WP West-South Single Family. This area is defined from Tonka Bay Road to Wekota Beach Park tennis courts along the west side of the road. There are a few driveway along this side and encompass heavy landscape/vegetation.

WP West-Wekota Beach Park. This area is defined from WP West-South Single Family to WP West-North Single Family. Tennis courts area surrounded with dense vegetation. No park parking on this side.

WP West-North Single Family. This area is defined from Wekota Beach Park tennis courts area to the corner of West Point Road. There is one primary resident with two driveways, one more for service. No park parking on this side of the road.

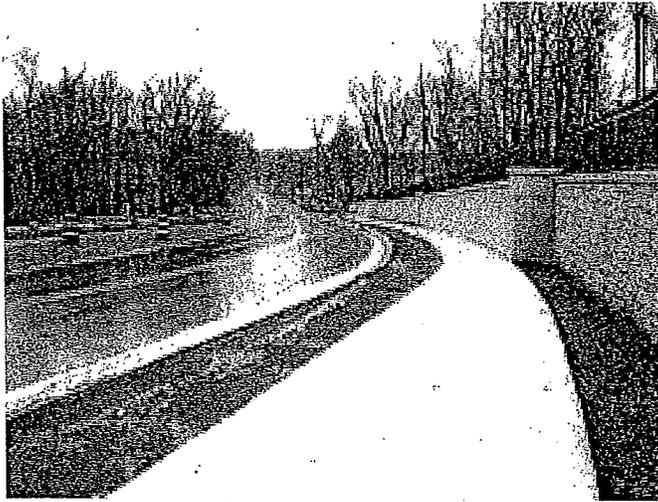
WP East-Single Family. This area is defined from Tonka Bay Road to Echo Bay Drive. This is primarily lawn grass area between some the road and a dense wooded area buffering adjacent wetland and residential homes. There are utility poles and mailboxes along this corridor, otherwise it is fairly open.

WP East-Wekota Beach Park. This area is defined from Echo Bay Drive to the beach area of Wekota Beach Park. This area has a low, heavily vegetated wetland area between the sanitary lift station(Echo Bay Drive) and the playground equipment. There are two sets of parking areas. One is located across from the tennis courts in the wooded area, and the other area is located next to the lawn grass area next to the playground equipment/beach area. A previous road was closed off and an 8'+/- bituminous trail is located in this area to separate the beach from the playground area. There is also an 8'+/- bituminous trail along the playground area. It would appear that a new trail would have to traverse between the parking stalls and the woods to prevent vehicles from backing into the trail. The trail could traverse within the lawn grass area and connect to the beach trail connector.

WP ROW of West Point Road. This area is defined as 50' right-of-way with 11'+/- drive lanes, minimal-to-no shoulder, and drainage ditches. The utility poles, mailboxes, and other miscellaneous items are primarily located on the south side. The boulevard areas vary with primarily steep slopes, dense vegetation, and lawn.

WP Utilities. There are minor and major utility conflicts observed. Minor utility conflicts would include relocation of items such as hydrants, telephone boxes, and other items. Major utility conflict is primarily the power/telephone poles. There are approximately 3 wood poles with arms along the study area of West Point Road along the south side. This ends near the lift station and prior to the Wekota Beach Park area.

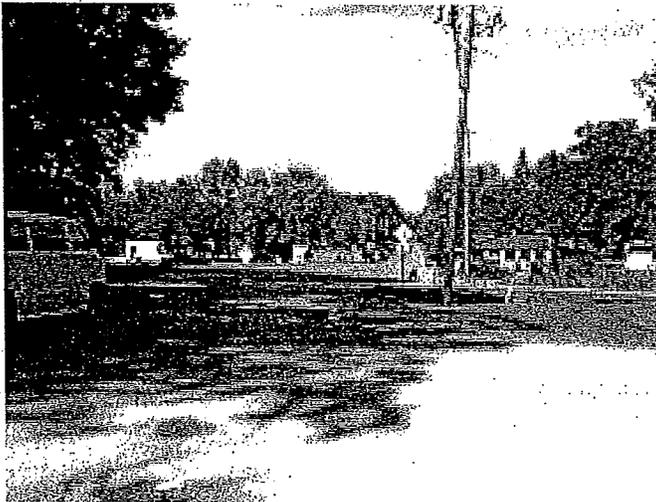
See Exhibit No. 2 – Study Area / Trail Location Map and Exhibit No. 3 – Project Photos.



Manitou Road(N) – New Improvements at Shopping Center



Manitou Road(N) – Xcel Property/Bus Company



Manitou Road(N) – Regional Trail Crossing



Manitou Road(N) – Regional Trail / Manitou Park



Manitou Road(N) – Brentwood Avenue



Manitou Road(N) – Northrup Avenue



Manitou Road(S) – Pleasant Avenue



Manitou Road(N) – Crabapple Lane



Manitou Road(S) – Posts South of Old Orchard Park



Manitou Road(S) – City Hall / Old Orchard Park



Manitou Road(S) – Woodpecker Ridge Road



Manitou Road(S) – Tonka Bay Road



Tonka Bay Road(W) – Double Intersection at Manitou Road



Tonka Bay Road(E) – Tonka Bay Lane



Tonka Bay Road(E) – Southside Homes at Highland Avenue



Tonka Bay Road(E) – Northside Homes at Highland Avenue



Tonka Bay Road(E) – Pearl Street



Tonka Bay Road(E) – Top of Hill Towards West Point Road



Tonka Bay Road(W) – West Point Road



West Point Road(N) – Tonka Bay Road



West Point Road(S) – Echo Bay Drive



West Point Road(S) – Tennis Courts



West Point Road(N) – Tennis Courts Parking



West Point Road(N) – Wekota Beach Park

III. PROPOSED DESIGN, LOCATION, IMPROVEMENTS

Trail Design Standards

Industry standards for trail development typically follow the Minnesota Bicycle Transportation Planning and Design Guidelines, by Minnesota Department of Transportation, dated June 1996. Key standards relevant to this project include the following. Two-way paths near streets and roads shall have grade separation for safety purposes. This includes either a curb with approximately a 4'(2' min.) boulevard or no-curb with a 20'(10' min.) ditch boulevard. The width of a two-way path is to be a minimum of 8' with a preferred width of 10'. Clearance from the edge of the path to structures, such as signs, poles and walls, is to be a minimum of 1.5 feet. Pedestrian ramps or constant grades across streets and driveways would be required to provide smooth transition along with any signage and striping at public street and high traffic areas.

The existing conditions along the study area are fairly restrictive and to minimize impacts it would be recommended to place the trail as close to the road as possible. The primary design would place the trail along a new street/road curb. The trail would be 10' wide(2' buffer between curb and travelway) and located at the back of curb. Some selected areas would allow the trail to traverse further away from the curb, thus only an 8' wide trail could be allowed if there is a minimum of 4' of grass boulevard. To further reduce cost of disturbance or relocation of items, some specific areas may want to locate the trail outside of the ROW in a trail easement. One of the more significant coordination items would involve the location and clearance of utility poles, road signs, and mailboxes. Hennepin County has indicated that they would prefer a boulevard to locate traffic signs, but also stated that they would be flexible to consider other options per specific constraints. See Exhibit No. 4 – Manitou Road(CR19) Typical Sections and Exhibit No. 5 – Tonka Bay Road / West Point Road Typical Sections for additional information on typical road/trail cross sections.

Location

The placement of the trail is based on discussions with key personnel(listed in the Conclusion and Recommendation section) and site observation/analysis to reflect the most cost effective and user friendly location. At the September 13th meeting, it was agreed that a single two-way trail is desired versus a bike lane on the shoulder of the road. This design provided safety and use for both pedestrians and bicycle users along with meeting the off-road criteria for potential DNR programs. See Exhibit No. 2 – Study Area / Trail Location Map.

The location of the trail along County Road 19 / Manitou Road was suggested by the review team to be on the east side, to traverse through the existing City Hall/Old Orchard Park trail area and connect to the new sidewalk at the Tonka Village Shopping Center located on the east side of CR 19. Schoell & Madson agrees with this preference and also recommends this location.

The location of the trail along Tonka Bay Road and West Point Road did not have a preference at the time study was authorized, thus Schoell & Madson analyzed the corridors and provide the following recommendations. Tonka Bay Road trail location could be on either side of the road, but after careful analysis of the potential impacts it is recommended that a trail location on the north side would be preferred. This is primarily due to a couple of key issues. The most complex issue is the close proximity of two

homes to the road on the south side between Highland Avenue and Pearl Street. A new trail would significantly impact the setback of the homes to the road, compared to the homes on the north side, and also would have difficulty resolving the utility pole/driveway/street conflict area at Highland Avenue. It is also noted there would be more earthwork fill to bring the trail to the appropriate grades, and the relocation and placement of all the mailboxes, which are currently placed all on the south side. In addition, the utility poles on the north side are primarily used for telephone and do not have arms, which would make relocation less complicated compared to the power poles on the south side. Although the north side also has impacts, it appears that there would be less difficulty locating the trail on the north side of Tonka Bay Road.

The location of the trail along West Point Road appears to be less complex compared to Tonka Bay Road. There are open lawn and park connections along the east side of the road and no direct impacts to residential properties compared to the west side. Thus it is recommended to locate the trail on the east side of the road.

Improvements

Improvements for the development of the trail may vary but the following list identifies some typical items. Bituminous pavement for the roadway and shoulder would need to be added or modified along all the roads, primarily CR 19, where the existing shoulder varies and does not always extend to the full dimension of 8' wide. Curb is typically bituminous along county roads but would highly recommend the implementation of concrete curb and gutter to match the new improvements at the south end of CR 19 and provide durability and longevity to the development of the trail edge. Concrete B624 along CR19, B618 along City Streets, at B612 at private property. The trail is anticipated to be 2.5" in depth of bituminous on a 4" depth aggregate base. Tree/Vegetation removal would include clearing and grubbing of wooded areas, including large mature individual trees not only for the trail but also for the required clearance for the utility lines and poles. Earthwork to involve subgrade preparation mostly cutting into existing slopes and filling approved backfill to bring existing grade to the appropriate elevation. Earthwork in cutting areas would typically involve the installation of a modular block retaining wall and fill areas would involve the import of select granular material and transitioned back to a 3h:1v slope. Installation of modular block walls, in low/wetland areas, typically do not have stable bases to support the walls, thus a sloped solution is preferred. Trail will involve the modification of driveways and street crossing, usually with pedestrian ramps, signage and striping. Storm sewer is one of the more complex items and would anticipate that changing the roads from surface ditch drainage to curb drainage would require the installation of catchbasin/manholes, pipes, flared end sections and riprap. Utility pole relocation is also an important part of the project and would normally require installation of a new pole and transfer all the lines and accessories to the new poles. Miscellaneous relocations would include items such as signs, hydrants, mailboxes, telephone boxes, adjusting manhole castings, and other related items. Wetland impacts and mitigation areas may occur if disturbance is significant in areas where wetlands are identified. Erosion control items such as blanket, bio-rolls, and other related items. Landscaping involving seed, sod, shrubs, and trees. Signage/striping involving any trail related signs and striping, such as trail crossings. Ornamental or trail lighting was not discussed and is not included within the proposed improvements. Wetland mitigation may be required if improvements impact existing wetlands. Location of wetland mitigation may be an issue due to limited open land.

The following is a brief summary of the trail improvements along the previously described sections.

Improvements - Manitou Road/CR 19 (East side only)

Description of corridor is from south to north and describing primarily the east side of the road. The sections describe similar segments of the corridor.

CR19 Xcel Area. The Xcel Area is defined between the bus company driveway, along Xcel Energy office parcel, and to the regional trail, which primarily contains bituminous curb and lawn grass front yards. This area, and Manitou Road/CR 19 ROW, is officially in the City of Shorewood. The trail would start at the north side of the bus company driveway and traverse through the lawn area of the Xcel building. Due to existing curb and utility poles near the road, it would be recommended that the trail could possibly traverse within the lawn area to minimize the pole relocation. Otherwise the trail could be located at the curb and relocate the poles. Significant additional improvements would include: tree/vegetation removal, storm sewer, and utility pole relocation.

CR19 Regional Trail. This area is defined by the 100' wide regional trail corridor that is identified as Three Rivers Park District LRT Trail(North). This area is officially in the City of Shorewood. A crossing would occur at this area and may require some improvements involving the Regional Trail. Significant additional improvements would include curb, storm sewer, and crossing treatments. The county is also exploring other traffic calming designs that may include a north/south trail on the west side from Manitou Park to the residential area south of the crossing. This may assist in long range planning of providing a connection of the trail to Manitou park.

CR19 Manitou Park. Although this is on the west side of Manitou Road, a connection from the proposed trail to the park would be desired. A crossing across Manitou Road/CR 19 would mostly likely not be allowed from Hennepin County due to the traffic control issues and the close proximity of the regional trail crossing. It does appear that the regional trail does traverse along the south side of the park a short distance to the west of the existing crossing. Three Rivers Park District has indicated that the regional trail could be used as a connection to the park, via the existing crossing. Thus a trail connection into the park would occur just west of the private property(All American Recreation). Significant additional improvements would include: tree/vegetation removal, earthwork fill material, and storm sewer.

CR19 Brentwood Business. There are two businesses just north of the regional trail that may have some impact from the proposed trail. The southern business has a fence and parking/staging area that appears to be setback far enough to accommodate the trail. The northern business is in close proximity to Manitou Road and would have significant impacts, due to a close building setback and related parking along the shoulder area of the road. A trail next to a new road curb would help minimize these impacts but would impact potential parking and operations of the business. Significant additional improvements would include: curb, storm sewer, utility pole relocation, and miscellaneous restoration.

CR19 Single Family South. This area is defined primarily between the streets of Northrup Avenue and Woodlawn Avenue. A trail would most likely be recommended to follow a new road curb, but there is some space to provide a boulevard if needed. Removing large mature front yard trees would be significant and would anticipate working with home owners about possible tree replacement. Significant additional improvements would include: tree removal, retaining walls, and storm sewer.

CR19 Single Family Central. This area is defined primarily between Woodlawn Avenue and the south end of Old Orchard Park. The trail is suggested to follow along a new road curb due to significant impacts to wetland/low areas, steep grades and fences. Significant additional improvements would include: tree/vegetation removal, earthwork fill material, retaining walls, and storm sewer.

CR19 Old Orchard Park. This area is defined from the Single Family Central area to the common driveway entrance to City Hall. The trail would have to traverse around the 4 support utility poles and guy wires adjacent to the road at the south end of the park and descend down the embankment to connect to the existing 8' trail located within the park. Although the trail is anticipated to be 10' wide along CR19, there may be areas, such as in this park that the county would allow the width to be reduced to 8'. As the trail progresses north to City Hall, it will have to traverse through the parking area. It would be recommended to not have the trail located within the parking area, but to be realigned to the west so that conflicts between cars and trail users will not be an issue. Significant additional improvements would include: tree/vegetation removal, earthwork fill material, curb, storm sewer, utility pole relocation, and miscellaneous restoration.

CR19 City Hall. This area is defined from the Old Orchard Park parking lot to Woodpecker Drive. It is anticipated that the trail would be located within city property between CR 19 and the expansive bituminous drive aisle. The bituminous path could either be located in the lawn area with a boulevard or at the back of a new curb, just west of the bituminous drive aisle. Significant additional improvements would include: curb, storm sewer, and miscellaneous restoration.

CR19 Single Family North. This area is defined from Woodpecker Drive to the duplex housing area. The trail would be located along a new road curb with the possible alternative of creating a boulevard between the trail and curb. Significant additional improvements would include: tree/vegetation removal, earthwork fill material, curb, storm sewer, utility pole relocation, and miscellaneous restoration.

CR19 Duplex Family. This area is defined from the Single Family North area to Tonka Bay Road. The location of the trail would be similar to the Single Family North cross-section, that would anticipate the trail adjacent to a new road curb with the possible alternative of creating a boulevard between the trail and curb. This area does encompass some drainage areas along with vegetation and slope areas. Significant additional improvements would include: tree/vegetation removal, earthwork fill material, curb, storm sewer, utility pole relocation, retaining walls and miscellaneous restoration.

CR19 ROW of Manitou Road(CR 19). Hennepin County has stated that they would consider looking at options for trail implementation along CR 19. It would be typical to have a road, shoulder, curb, boulevard and trail section, but acknowledge that some areas get tight with heavy vegetation, wetlands, sloped conditions, traffic signs, mailboxes, utility poles, and other miscellaneous items. Since CR 19 is identified as a regional trail corridor, the County and Three Rivers Park District do have some interest in progressing the implementation of the trail.

Improvements - Tonka Bay Road

TB South Duplex. This area is primarily at the southeast corner of Manitou Road and Tonka Bay Road and is duplex housing. Due to the double intersection of Tonka Bay Road at CR 19, it is recommended that the trail traverse eastward and cross Tonka Bay

Road at Tonka Bay Lane. This would provide a safer crossing and minimize conflicts until Hennepin County extends the trail northward. Retaining walls and possible tree removal is anticipated to be some of the significant improvements in this area.

TB Northwest Single Family. This area is defined to encompass the Tonka Bay Lane community, which is primarily single family side yards, with a significant setback to the buildings. The trail would cross at the western Tonka Bay Lane entrance and proceed eastward. There is some space along the shoulder for a curb and trail, but it is anticipated that tree/vegetation removal, retaining walls, earthwork fill material, storm sewer, and utility pole relocation would be some of the significant improvements to also occur. On a side note, it may also be recommended to extend the trail along the north side from Tonka Bay Lane to CR 19 to provide a future connection.

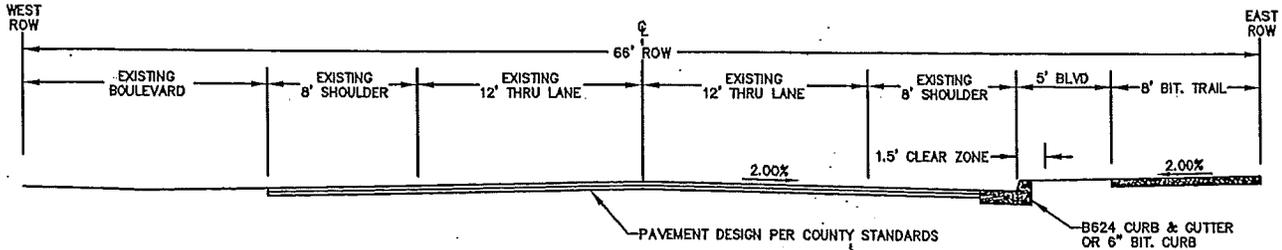
TB Northeast Single Family. This area is defined by the low area(old trolley line) to West Point Road, which is primarily single family with driveways facing Tonka Bay Road. The trail would continue eastward, across the front yards and driveways, and traverse to the east side of West Point Road. Removing large mature front yard trees would be significant and would anticipate working with homeowners about possible tree replacement. There is some space along the shoulder for a curb and trail, but it is anticipated that tree/vegetation removal, retaining walls, earthwork fill material, storm sewer, hydrant relocation, driveway reconstruction, and utility pole relocation would be some of the significant improvements to also occur.

Improvements - West Point Road

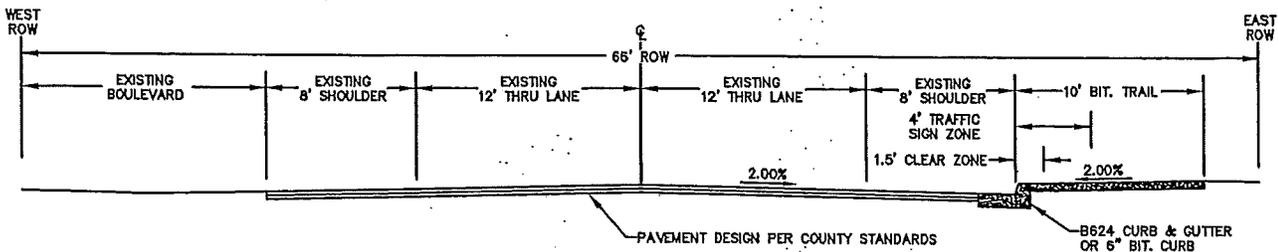
WP East-Single Family. This area is defined from Tonka Bay Road to Echo Bay Drive and a trail could easily traverse around the utility poles and mailboxes in the open lawn area. Although a trail at the edge of road would be preferred, locating the path with extended boulevard would minimize impacts and possibly not require a curb. It would be assumed that a trail easement may be required if the final location extends outside of the ROW.

WP East-Wekota Beach Park. This area is defined from Echo Bay Drive to the beach area of Wekota Beach Park. The trail in this area would most likely be located next to a road curb to minimize the impacts along the heavy vegetation/wetland area. As the trail traverses by the parking, across from the tennis courts, the safe location would be located between the parking and the vegetation/wetland area, not between the parking stalls and road. Once the trail reaches the playground area, the path can traverse through the lawn area and connect to the existing bituminous trail, near the beach. Tree/vegetation removal, curb, storm sewer, and earthwork fill material would most likely be other significant improvements in this area.

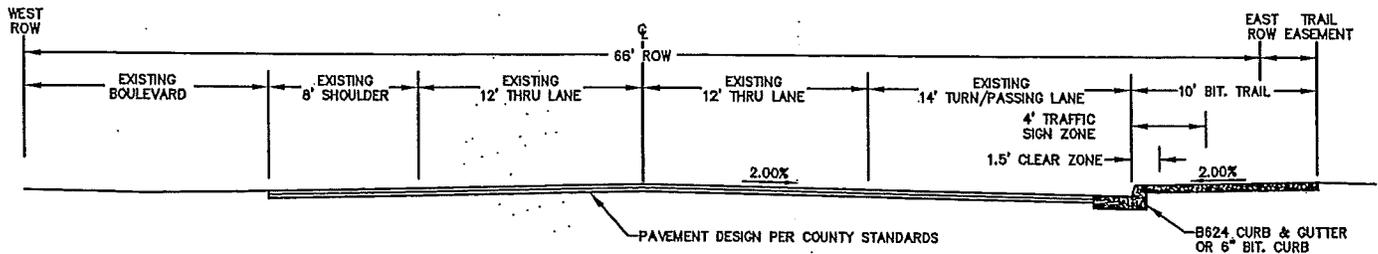
**Manitou Road(CR 19), Tonka Bay Road, and
West Point Road
Bicycle and Pedestrian Trail Study
SCHOELL & MADSON, INC.
December 13, 2005**



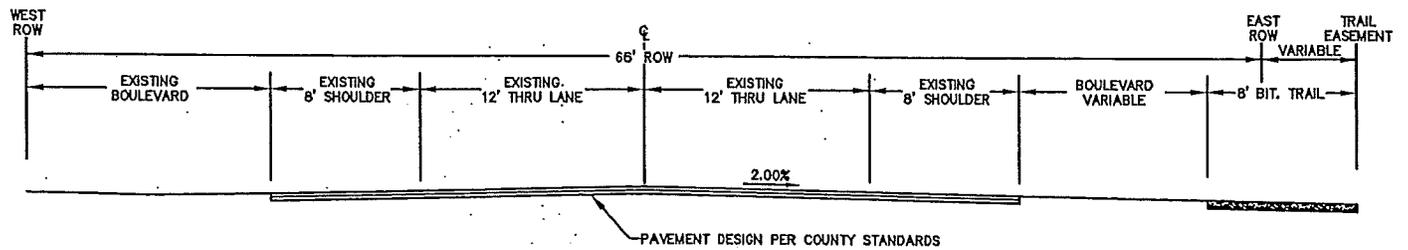
MANITOU ROAD / C.R. 19 - TYPICAL COUNTY 19 SECTION (PER 2005 IMPROVEMENTS)



MANITOU ROAD / C.R. 19 - TRAIL NO BOULEVARD TYPICAL SECTION



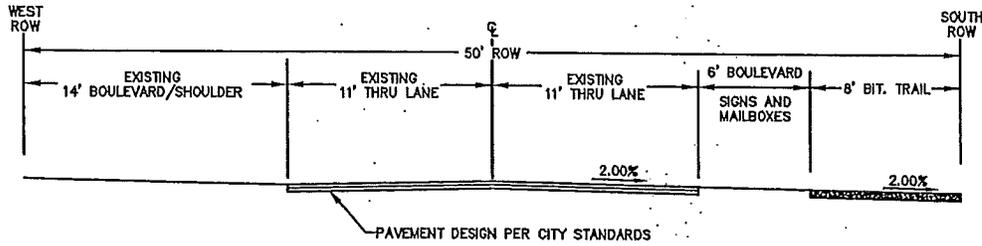
MANITOU ROAD / C.R. 19 - TRAIL NO BOULEVARD TYPICAL SECTION



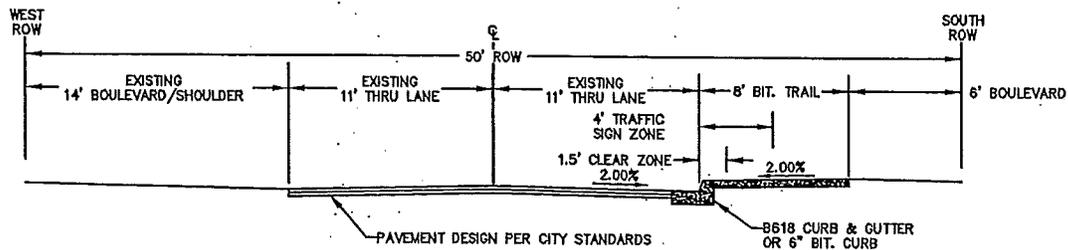
MANITOU ROAD / C.R. 19 - TRAIL WITH BOULEVARD TYPICAL SECTION

**MANITOU ROAD(C.R.19) TYPICAL SECTIONS
EXHIBIT NO. 4**

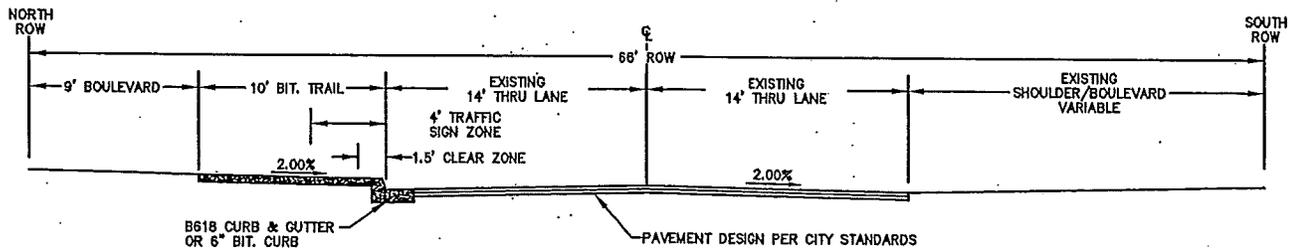
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WEST POINT ROAD - TRAIL WITH BOULEVARD TYPICAL SECTION



WEST POINT ROAD - TRAIL NO BOULEVARD TYPICAL SECTION



TONKA BAY ROAD - TRAIL NO BOULEVARD TYPICAL SECTION

IV. FINANCIAL ELEMENTS OF THE PROJECT

After reviewing potential partners/grants, the primary funding for the trail final design and implementation would most likely involve four sources: The City of Tonka Bay, Hennepin County, Department of Natural Resources(DNR), and the City of Shorewood. The City of Tonka Bay would be the primary financial support of any trail implementation, with a small segment funded by Shorewood if they wish to participate. Hennepin County would have some applicable programs primarily up to 50%(\$100,000 max.) matching funds along County Road 19/Manitou Road. Department of Natural Resources would have up to 50% matching with a maximum limit of \$100,000 for qualifying grants and could be applicable for both City and County projects. It was also identified that if both the County and the DNR are involved with matching funds, that the funding would be split to 1/3 for each party(maximum of \$100,000 each). The utility companies, most notably Xcel, may be required to fund the cost of pole relocation if certain conditions apply. A more detailed summary, per partner, is listed below.

City of Tonka Bay

The primary funding would have to be generated from city funds and thus would allow the submission of applications for potential matching grants. It is our understanding that the City's general budget would be the primary source of funds or that other avenues such as a mill levy or assessment(such as City Beautification Fee) would be worth exploring to provide some additional financial assistance on projects outside of typical City improvements. The mill levy may be preferred over the assessment, due to the tax benefit and less complex funding format. The City may explore other possibilities involving private funds, such as donations from local individuals, interest groups, or businesses. Providing incentives such as names on a plaque/bricks or naming rights to the trail. City of Shorewood would be in a similar position. Using city staff and resources to complete some of the construction has been suggested(such as tree removal, sodding). This may have some merit if the city has the equipment and resources but also want to note liability potential and General Contractor coordination if things do not go as planned. Such as, sod not installed on time and rain erodes the topsoil into the lake, or pulling a stump out of the ground disrupts a utility line. Value engineering/Alternatives during design development may find some approved reduction in construction cost compared to what is listed; such as reduced shoulder width or bituminous curb instead of concrete curb.

Hennepin County

The county has three programs that would apply to trail development and relevant to only the CR 19 / Manitou Road corridor. Primarily because this segment is identified as a future regional trail corridor and has support of the county. Funding is more on a first come first serve bases with the county. CR 19 has just recently underwent a bituminous overlay project and has no plans for immediate improvements, thus including the trail within a county project would not occur within the near future. Programs would also verify conformance with county and/or MNDOT 1996 Bike Design Guidelines. Different segments of trail development can apply for the same programs.

The first program is *Hennepin County Aid to Municipalities*. This program is set up for the County to assist financially with municipalities that are less than 5,000 in population and do not qualify for State-Aid. Amount of assistance is typically \$3,500 per city in which Tonka Bay already participates and typically uses the entire amount. This may provide minimal assistance.

The second program is *Roadside Enhancement Partnership Program*. This program is designed to assist with roadway enhancements not normally part of street/road projects. Promotion of a multi-modal use of the corridor(designated pedestrian travelways) would be the primary topic for consideration. The majority of items would need to occur concurrently with a County construction project, thus this program is less applicable. The Partnership Program does share in cost ranging from 33%-50%, up to \$200,000-\$300,000 per mile. Some of the items include: street light installation(pedestrian lighting not applicable), undergrounding of overhead utilities, security improvements(fencing and lighted transit stops), transit stops(including benches/shelters), and roadway beautification(landscape). Unfortunately, most of these improvements are not slated to be integrated with the implementation of the trail and may provide minimal financial assistance.

The third program are the Hennepin County Bicycle CIP(Capital Improvement Program) Fund and Bicycle GAP Fund. The CIP focuses on the development of the regional bicycle system and the GAP focuses on connecting existing trails. General summary is that the county will team up with the municipality with a 50/50 share of the cost, up to \$100,000 maximum. These programs are most applicable for the trail development along Manitou Road(CR 19) and provide the greatest chance for financial assistance.

Federal programs, such as SAFETY-LU, do provide some other avenues for assistance, but is primarily controlled through the Met Council, which tends to prioritize funding to urban areas. The length of time to receive this type of funding could easily take a decade and may be double the cost to adhere to all the restrictions. Thus, exploring this area of funding may not be worth the effort.

Department of Natural Resources

The Department of Natural Resources has two programs that would be relevant to trail development and once granted must be completed typically within a two year time frame. Applications normally are due at the end of February of each year, with competitive selection in May(or July). Only one program can be granted for a project, but application for both can occur. Programs would also verify conformance with department and/or MNDOT 1996 Bike Design Guidelines. Projects throughout the entire state of Minnesota compete for this funding, thus being selected is more difficult than the county programs. Different phases of trail development can apply for the same programs.

The Local Trail Connections Program's purpose is to promote relatively short trail connections between where people live and desirable locations, not to develop significant new trails. With the proposed trail connecting Wekota Beach Park, Old Orchard Park, and the Regional Trail, it would appear that this project would apply. Level of assistance involves a 50/50 match up to a maximum of \$100,000.

The Federal Recreation Trail Program's purpose is to encourage the maintenance and development of motorized, non-motorized, and diversified trails by providing funding assistance. Priority is given to projects that have cooperation of a local trail organization and/or urban youth corps workers such as the Minnesota Conservation Corps, but may not be applicable for municipalities. Although this project qualifies, an association with a local trail group would be helpful in receiving higher priority. Level of assistance involves a 50/50 match up to a maximum of \$100,000.

Utility Companies

Cost for relocating telephone/power poles within the ROW would be the responsibility of the utility company with the following restrictions. Only relocation of poles would be part of the utility company's cost and the poles have to be currently in the ROW and relocated within the ROW, including any arms. If the utility company has a permit, such as in an old railroad line, outside of the ROW, or is requested for location changes(such as burying the lines or relocating them to another set of poles), then the cost would be pasted on to the requestor(City of Tonka Bay). Other related costs such as tree trimming/removal and building reconnection would also be pasted on to the requestor(City of Tonka Bay).

Cost Estimates

Figure No. 1 – Manitou Road(CR 19) Cost Estimate and Figure No. 2 – Tonka Bay Road / West Point Road Cost Estimate illustrate the project cost estimate separating them into two categories: Manitou Road(CR 19) and Tonka Bay Road/West Tonka Road. The estimates are broad assumptions of possible construction and project related costs. Both figures assume a trail at the back of a road shoulder curb, with the exception of the Old Orchard Park and Wekota Beach Park where the trail would traverse away from the road into the lawn area.

Cost Summaries

Below are some general cost summaries to assist Tonka Bay with potential costs of the project if receiving no assistance or maximum assistance. This does not include the cost of inflation or any other typical multi-year actual dollars.

No Financial Assistance

Manitou Road(CR19)	
<u>\$998,800</u>	City of Tonka Bay
\$998,800	Total for Manitou Road(CR 19)

Tonka Bay Road / West Point Road	
<u>\$457,000</u>	City of Tonka Bay
\$457,000	Total for Tonka Bay Road / West Point Road

Maximum Financial Assistance

Manitou Road(CR19)	
\$100,000	DNR Program
\$100,000	Hennepin County Program
\$208,000	Utility Company(Utility Pole Relocation w/ 10% Conting.)
\$ 79,080	Value Engineering/Alternatives (10% non-utility constr.)
\$ 71,641	City of Shorewood(14% of remaining City Cost)
<u>\$440,079</u>	City of Tonka Bay(86% of remaining City Cost)
\$998,800	Total for Manitou Road(CR 19)

Tonka Bay Road / West Point Road	
\$100,000	DNR Program
\$100,100	Utility Company(Utility Pole Relocation w/ 10% Conting.)
\$ 33,600	Value Engineering/Alternatives (10% non-utility constr.)
<u>\$223,300</u>	City of Tonka Bay(remaining)
\$457,000	Total for Tonka Bay Road / West Point Road

Maximum Financial Assistance – Manitou Road(CR 19) Two Phase

Manitou Road(CR19) – North(33%)	
\$ 78,290	DNR Program
\$ 78,290	Hennepin County Program
\$ 68,640	Utility Company(Utility Pole Relocation w/ 10% Conting.)
\$ 26,094	Value Engineering/Alternatives (10% non-utility constr.)
<u>\$ 78,290</u>	City of Tonka Bay(Matching funds to DNR and County)
\$329,604	Total for Manitou Road(CR 19) - North

Manitou Road(CR19) – South (67%)	
\$100,000	DNR Program
\$100,000	Hennepin County Program
\$139,360	Utility Company(Utility Pole Relocation w/ 10% Conting.)
\$ 52,984	Value Engineering/Alternatives (10% non-utility constr.)
\$ 58,140	City of Shorewood(21% of south leg)
<u>\$218,712</u>	City of Tonka Bay(79% of south leg)
\$669,196	Total for Manitou Road(CR 19) - South

Project: Trail Study - Manitou Road(CR19), Tonka Bay Road, West Point Road
 Client: City of Tonka Bay
 Date: 12/13/2005
 Job No.: 10017-043
 By: Schoell & Madson, Inc.

Estimates are broad assumptions of possible
 construction and project related costs.

COST ESTIMATE - Manitou Road(CR19)

Item	Description	Unit	Unit Price	Quantity	Total Amount
1	Clearing and Grubbing - Vegetation / Large Trees	LS	\$33,000.00	1	\$33,000.00
2	Erosion Control - Silt Fence, Blanket, Inlet	LS	\$18,200.00	1	\$18,200.00
3	Sawcut & Remove Pavement - Shoulder and Driveways	SF	\$0.65	17,100	\$11,115.00
4	Remove/Relocate Miscellaneous - Hydrants, Mailboxes, Signs, Etc.	LS	\$20,000.00	1	\$20,000.00
5	Grading / Site Prep - Excavation and Earthwork	LS	\$38,000.00	1	\$38,000.00
6	Granular Borrow - Backfill (CV)	CY	\$12.00	1800	\$21,600.00
7	Retaining Wall - Mondular Block, 18" below grade	SF	\$22.00	1200	\$26,400.00
8	Shoulder Bituminous Pavement - 2' W. 4" Wear/Tack, 3" Base, 9" Agg.	SY	\$25.00	1160	\$29,000.00
9	Trail Bituminous Pavement - 6300 LF 2.5" Bit., 4" Agg.	SY	\$10.50	7000	\$73,500.00
10	Pedestrian Ramps - 4" Concrete, 4" Agg.	EA	\$700.00	33	\$23,100.00
11	Driveway Reconstruction - 6" Concrete, 5" Agg.	SY	\$65.00	500	\$32,500.00
12	B624 Concrete Curb and Gutter - County Standard	LF	\$16.00	5200	\$83,200.00
13	Signage & Striping - Street Crossing Zebra Crosswalk, Stop Bar, Signs	EA	\$3,000.00	6	\$18,000.00
14	Storm Sewer - 2'x3' CB, 30LF RCP, Flared End	EA	\$7,000.00	13	\$91,000.00
15	Sod and Topsoil Lawn Grass and 4" Topsoil Depth	SY	\$5.00	7000	\$35,000.00
16	Tree Restoration - Replacement 2.5" Shade or 6' ht. Ev.	EA	\$400.00	35	\$14,000.00
17	Relocate Utility Pole - Telephone and Electrical	EA	\$7,000.00	27	\$189,000.00

Subtotal	\$756,615.00
Contingency - 10% of Subtotal	\$75,661.50
Estimated Engineering & Miscellaneous Cost - 20% of Subtotal/Contingency	\$166,455.30
Estimated Project Total	\$998,731.80

Project: Trail Study - Manitou Road(CR19), Tonka Bay Road, West Point Road
 Client: City of Tonka Bay
 Date: 12/13/2005
 Job No.: 10017-043
 By: Schoell & Madson, Inc.

Estimates are broad assumptions of possible
 construction and project related costs.

COST ESTIMATE - Tonka Bay Road / West Point Road

Item	Description	Unit	Unit Price	Quantity	Total Amount
1	Clearing and Grubbing - Vegetation / Large Trees	LS	\$22,000.00	1	\$22,000.00
2	Erosion Control - Silt Fence, Blanket, Inlet	LS	\$7,500.00	1	\$7,500.00
3	Sawcut & Remove Pavement - Shoulder and Driveways	SF	\$0.65	2,000	\$1,300.00
4	Remove/Relocate Miscellaneous - Hydrants, Mailboxes, Signs, Etc.	LS	\$14,000.00	1	\$14,000.00
5	Grading / Site Prep - Excavation and Earthwork	LS	\$22,000.00	1	\$22,000.00
6	Granular Borrow - Backfill (CV)	CY	\$12.00	350	\$4,200.00
7	Retaining Wall - Mondular Block, 18" below grade	SF	\$22.00	1400	\$30,800.00
8	Shoulder Bituminous Pavement - 1' W. 2" Wear/Tack, 2" Base, 6" Agg.	SY	\$18.00	240	\$4,320.00
9	Trail Bituminous Pavement - 2430 LF 2.5" Bit., 4" Agg.	SY	\$10.50	2700	\$28,350.00
10	Pedestrian Ramps - 4" Concrete, 4" Agg.	EA	\$700.00	9	\$6,300.00
11	Driveway Reconstruction - 6" Concrete, 5" Agg.	SY	\$65.00	250	\$16,250.00
12	B618 Concrete Curb and Gutter - City Standard	LF	\$10.00	2200	\$22,000.00
13	Signage & Striping - Street Crossing Zebra Crosswalk, Stop Bar, Signs	EA	\$3,000.00	4	\$12,000.00
14	Storm Sewer - 2'x3' CB, 30LF RCP, Flared End	EA	\$7,000.00	6	\$42,000.00
15	Sod and Topsoil Lawn Grass and 4" Topsoil Depth	SY	\$5.00	2700	\$13,500.00
16	Tree Restoration - Replacement 2.5" Shade or 6' ht. Ev.	EA	\$400.00	20	\$8,000.00
17	Relocate Utility Pole - Telephone and Electrical	EA	\$7,000.00	13	\$91,000.00

Subtotal	\$345,520.00
Contingency - 10% of Subtotal	\$34,552.00
Estimated Engineering & Miscellaneous Cost - 20% of Subtotal/Contingency	\$76,014.40
Estimated Project Total	\$456,086.40

V. CONCLUSION AND RECOMMENDATION

Conclusion and Recommendation

The implementation of the trail along this corridor anticipates a much higher cost and coordination with other agencies than typical trail projects. Thus it would be recommended to complete segments of the trail to help make progress and provide more affordable costs along this lengthy corridor. The existing conditions of slopes, dense vegetation, wetlands, and utility poles are the most significant items that need to be addressed. Wetland delineation and wetland mitigation may be required due to some potential trail impact areas, but due to a lack of information wetland issues and costs are not part of the study, but may be an additional cost.

Tonka Bay Road and West Point Road is the first segment recommended for implementation, due to less coordination and a shorter distance of implementation. Coordination with utility companies(primarily electrical and telephone) would be a primary item. Application for DNR programs would need to be submitted at the end of February and if selected in May(sometimes July), the City would have two years to complete construction. This would allow the City to wait for matching funds to offset construction costs. Selection for these programs are fairly competitive and City may have to resubmit multiple times before being selected. This could extend the time frame to a couple of years before development could actually occur. If matching funds are required as part of the trail development program, than the earliest the project could start is Fall of 2006, if selected by the DNR and notified in June.

CR 19 / Manitou Road would most likely be looked at separately, and would require involvement of Hennepin County, City of Shorewood, Xcel Energy, DNR, and possibly Three Rivers Park District. With the regional bike trail crossing and Xcel property being in Shorewood, there would need to be further discussions on this segment with this municipality. Although one project involving the entire CR 19 corridor would be preferable, this may also need to be divided into different development phases. Collaborated funding would be anticipated with Hennepin County and Tonka Bay being the primary stakeholders, with possible assistance from the DNR, depending on selection. This project could take a couple of years to develop and most likely not start until 2007/2008. A two-phase development would most likely include the first segment from Tonka Bay Road to Old Orchard Park and the following phase from Old Orchard Park to the south end connection.

As part of the design stage of the projects it would be anticipated that, at a minimum, the following services would be required: Boundary/Topographic Survey, Wetland Delineation, Wetland Mitigation, Civil Engineer/Landscape Architecture, Storm Water Management, Utility Coordination, and other related services. Although simple in concept, the trail would involve significant design work involving wetland impacts and storm water analysis/design.

Contributors / Key Contacts

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